6100004-04

VREngine™/MD/CD Series

High Resolution Display Controllers
User's Manual (for Windows)

Ver. 3.2

RealVision Inc.

FCC Notice

Federal Communications Commission

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio or television communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the radio or television receiving antenna.
- Move the computer or equipment away from the receiver.
- Plug the computer or equipment into an outlet on a circuit different from that which the radio or television receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

CE Statement

This is Class A product. In a domestic environment this product may cause radio interface in which case the user may be required to take adequate measures.

Copyright Notice

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This document, as well as the hardware and software products described or referenced in this document, are confidential and proprietary products of RealVision Inc. They are provided under, and subject to, the terms and conditions of a written license agreement between RealVision and its customers, and may not be transferred, disclosed or otherwise provided to third parties, unless otherwise permitted by that agreement.

Welcome

Thank you for choosing the VREngine/MD/CD Series product, RealVision's high resolution display controllers that target the demands of imaging applications and support high-resolution LCD monitors.

These boards are exclusively designed to deliver the highest quality visual image on 2-Megapixel, 3-Megapixel and 5-Megapixel LCD displays.

These boards are PCI bus graphics boards.

VREngine/MD/CD Series has following four products lineup.

Product Name	Product Outline
VREngine/MD2W	Color & Grayscale Display Card for 2-Megapixel LCD Monitor
VREngine/CD3W	Color Display Card for 3-Megapixel LCD Monitor
VREngine/MD3W	Grayscale Display Card for 3-Megapixel LCD Monitor
VREngine/MD5W	Grayscale Display Card for 5-Megapixel LCD Monitor

Regarding LCD monitor or related matters, please contact your local supplier or display manufacturer.

About This Manual

- Read this manual thoroughly before you use the "VREngine" board.
- This manual provides detailed information on how to install and configure your VREngine/MD/CD Series high-resolution display controllers. For information regarding your computer monitor, or other attached devices not associated with RealVision Inc., please consult the user's manuals or your supplier for those devices.
- In this manual, following product specific marks are prepared and indicate that the instructions with these marks have product specific contents. These contents are distinguished from products common matters. Please refer this manual with this notice.
  - VREngine/MD2W board specific contents : **MD2W**
  - VREngine/CD3W board specific contents : **CD3W**
  - VREngine/MD3W board specific contents : **MD3W**
  - VREngine/MD5W board specific contents : **MD5W**
- Keep this manual as close to your computer as possible so that you can review to it in need. In case of missing the manual, contact your local supplier.

- Attach this manual to the board when you transfer it to a third person.
- The contents of this manual may be changed without notification.

About Trade Marks

- VGA is a trademark of IBM.
- VREngine™ is a trademark of RealVision.
- All brand names are the property of their respective owners.

For Safety Use

This product is designed and manufactured by taking your maximum safety into account. There are, however, possibilities of causing severe accidents by your miss handling. In order to avoid such accidents, it is to be desired that you should read this manual thoroughly before using this product.

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1. Check and Save Packing Materials

- Make sure that your VREngine package contains the following :
  - Display controller board
  - Driver & Installer CD-ROM
  - User's manual
- Contact your local supplier if any of these items are missing.
- Save the box and packing materials in case you need to return the board to the supplier for any reason. Shipping damage is not covered under the warranty.

2. Installation Procedure

Make sure the installation should be done in following steps :

1) Configuring DIP switch settings

2) Install the board into host system

3) Connection with LCD monitor(s) (Connect interface cable(s))

4) Power on the host system

5) Install driver software

6) Setting for [Display Properties] in Control Panel

7) Reboot the host system

3. Board Installation

In this section, how to install VREngine/MD/CD Series into your computer is described. Refer to User's Manual of your computer if needed.

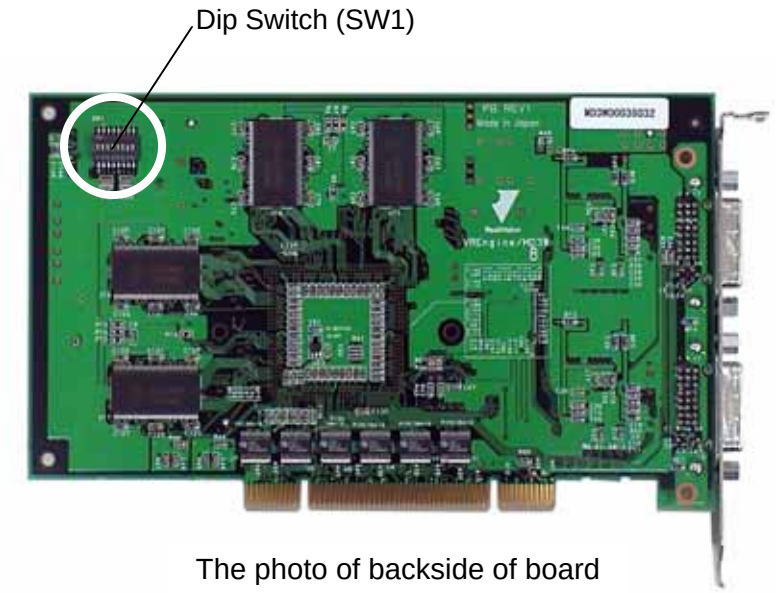
3.1 Notices for Board Installation

- It is recommended to ask your vendor to install the VREngine/MD/CD Series into your computer.
- Do not touch connectors, pins of IC/LSI, and patterns on the board directly as the electronics devices used may be damaged by electro-static discharge.
- Clean your hands before installing the board in order to avoid dangers of possible slippage caused by stains or oil stuck to your hands.
- Keep the remaining parts not used at your installation as they may be to use next installation later on.
- Make sure if there are no any damages, deformations, rubbish, or stains on connectors, connector pins, and contacts before doing connection. These defects might be the root cause of short circuits that also might result a fire.
- Be careful in handling the connectors to prevent them from dropping down onto or dragging on the floor, so that the connectors are kept clean and no damages.
- Secure the bolts and nuts fastened enough so that dropouts, looseness of bolts can be prevented. Otherwise, short & open circuits may occur.
- Do not step on or put a heavy body on, or add intense heat to the cables. To remove the cables, unfasten the locks and then pull out straightly by grabbing the connectors. Putting mechanical stresses, adding intense heat to the cables, or prying the connectors may cause damages to the cables and connectors and then result in a fire by a short circuit.
- This graphics board is for use only with compatible UL Listed personal computers that have Installation Instructions detailing user installation of card cage accessories.

3.2 Configuring DIP Switch Settings

The VREngine/MD2/MD3 board supports both grayscale and color modes, and the VREngine/CD3 board supports only color mode. Multi-head support is available through the use of multiple VREngine/MD/CD Series controllers using Windows 2000 Operating system or greater.

In order to configure for specific display settings, you may need to change the dipswitch settings on your board or boards. The dipswitches is located on the corner of the board, opposite to the connectors, as described below :



The photo of backside of board

■ Settings for grayscale display

To display in grayscale mode using the product, you will need to set the dipswitch to the following before you install the board. The default factory, out-of-box setting for the VREngine/MD2W and VREngine/MD3W boards are as follows respectively.

Grayscale display settings

MD2W

MD3W MD5W

■ Settings for color display

To display in color mode using the product, you will need to set the dipswitch to the following before you install the board. The default factory, out-of-box setting for the VREngine/CD3W board is as follows.

Color display settings

MD2W

MD3W CD3W MD5W

Note)
To change the board from color display mode to grayscale mode or from grayscale mode to color mode, you will require to install software driver again. (please see page 13, Software Installation)

■ Setting for multiple board configuration

You can install more than one VREngine/MD/CD Series board into a same system. Dipswitch(s) setting for secondary or later board(s) is as follows.

Multiple board settings

MD2W

MD3W CD3W MD5W

Note)

- Above settings are applied to secondary or later board. Please make sure the first board is set as grayscale mode or color mode.
- The maximum number of board to be installed into a same system depends on the specification of host system.
- You need to set the VREngineMD/CD Series board(s) as Multiple-board setting when you use or need to use graphics adaptors on mother board, on AGP bus or on PCI bus.
- If you need other settings except for described above, please contact your local supplier to confirm the right dipswitch setting(s).

3.3 Board Installation Procedure

1) Make sure the power is turned off when you get started. Turn off your computer and peripheral devices hooked to it.

Note)
The internal parts of your computer are still very hot just after the turn off. Wait until everything gets enough cool and then start with the installation.

2) Follow User's Manual of your computer to remove the cover.

3) Follow User's Manual of your computer and install the board into open PCI slot.

(1) If the target slot has a dust cap, remove it.

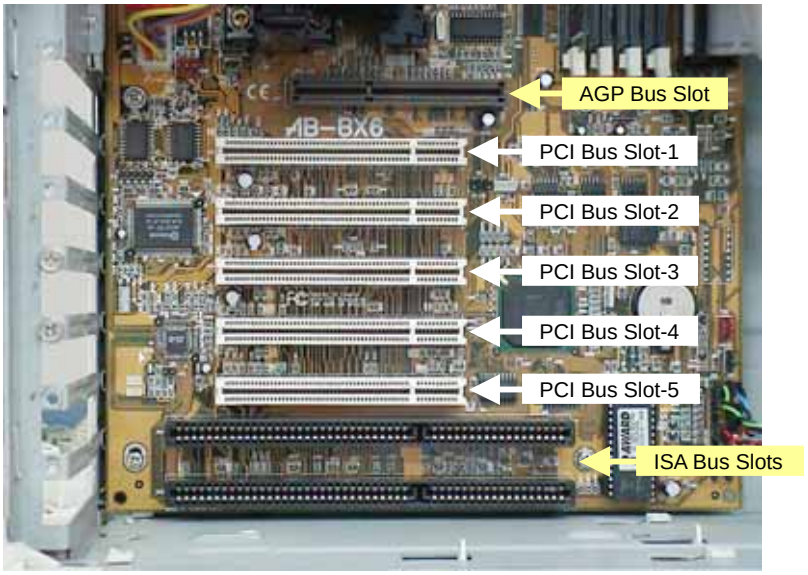
(2) Remove the bolts, which fix the rear cover of the PCI slot. The bolts removed will be used to fix the graphics board.

(3) Make sure and change the setting for the Dipswitch (SW1) on the corner of the board, opposite to the connectors. (Please see page 7 on Configuring DIP witch Settings)

(4) Insert the edge connector of the board into the PCI slot slowly with care.

(5) Make sure if the board is inserted solidly, and then fix the rear panel using the bolts removed at step (2). Make sure the board is installed properly.

Note)
If the board is not properly installed, you need to remove it from the slot and install it again. Do not put excessive force to install or to remove the board so that you can prevent it from causing damages to the cables, connectors, and the board itself.



Above photo is an example of bus slots situation in PC as host system. You must install VREngine/MD/CD Series board(s) into PCI bus slot(s). In above example, five PCI bus slots are available between AGP bus slot and ISA bus slots. The order of bus slot depends on a PC which you will use and some PC doesn't have AGP or ISA bus slot(s).

When you install only one board, you can use any unused PCI bus slot.

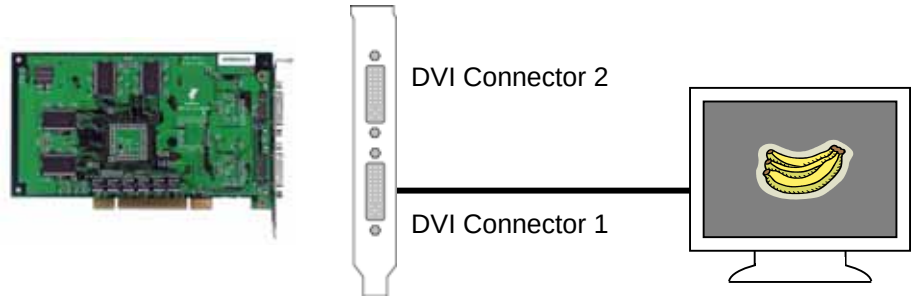
When you install multiple boards, you can use any unused PCI bus slot too. However, you may need a bus order or slot number during software driver installation, and please make sure these information before a installation.

3.4 Connection with LCD Monitor(s)

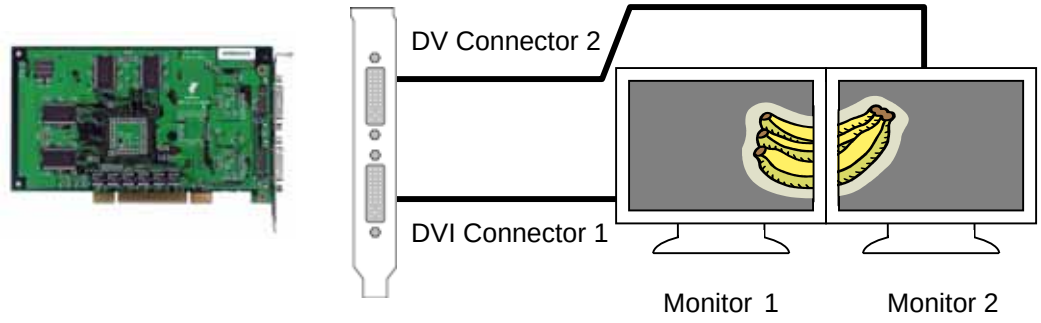
Regarding the connection with LCD monitor(s), please confirm following notes and follow the instructions of manuals which is attached to LCD monitor(s).

In the case of connecting 3M pixels color monitor(s), please refer "3) Case of connecting 3M pixels color monitor".

1) Case of one board connecting with one monitor
You must connect DVI connector 1 to a monitor. If you use DVI connector 2, then no image is displayed.

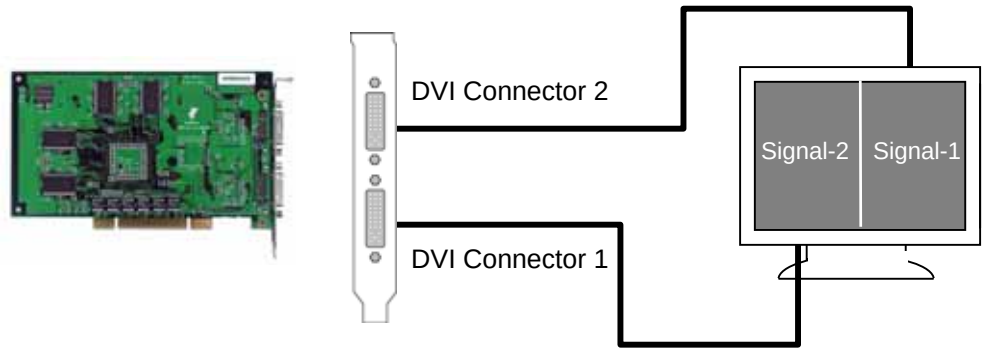


2) Case of one board connecting with two monitors
Please connect DVI connector 1 to the monitor on the left side (e.g. Monitor 1), and DVI connector 2 to the monitor on the right side(e.g. Monitor 2). If you change connectors to opposite sides, then images are also displayed to opposite sides.



3) Case of connecting 3M pixels color monitor
Please connect both of DVI connector 1 and DVI connector 2 to the same monitor.

You must connect DVI connector 1 to the Signal-2 side of the monitor and DVI connector 2 to the Signal-1 side of the monitor. If you connect cable to wrong sides, the image is not displayed correctly.



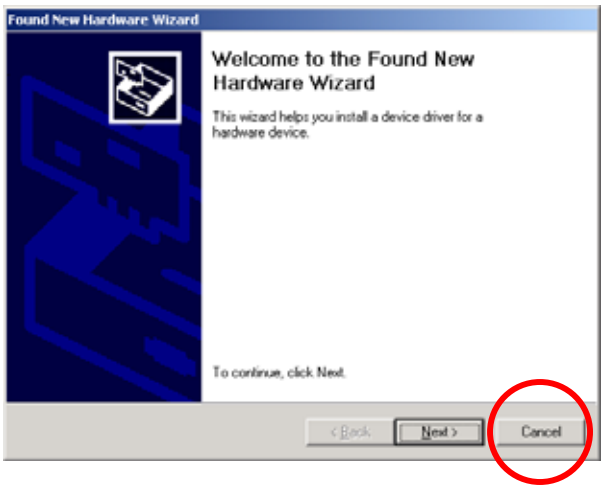
4. Software Installation

Once you have completed installing the hardware and rebooted your PC, you will be ready to install the software or driver. The following are the procedures for installing the VREngine board driver into either Windows NT 4.0, Windows 2000, Windows XP.

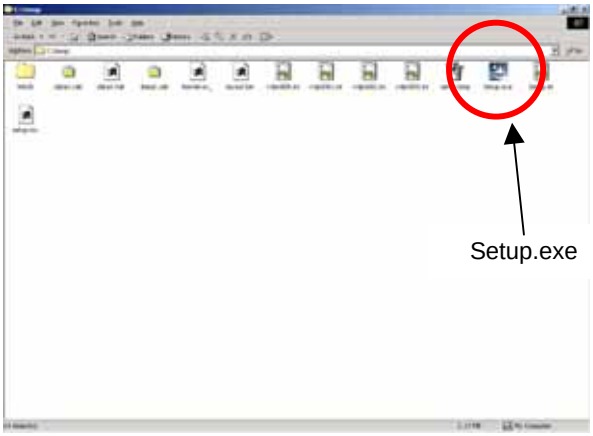
4.1 WindowsNT4.0/ 2000/ XP Driver Installation Procedure

1) Start Windows NT4.0, 2000 or XP and login as administrator. You need administrator privileges to install drivers.

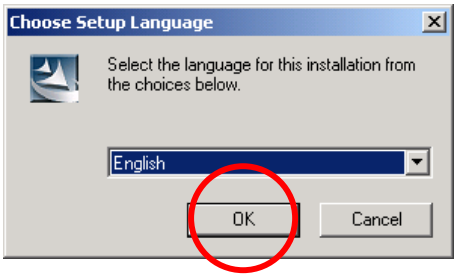
2) Following the message [Found New Hardware], [Found New Hardware Wizard] is displayed. Then, please click [Cancel] button.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

3) Insert the [Software Driver CD-ROM] into the host system and refer files. Please double click [Setup.exe] icon.

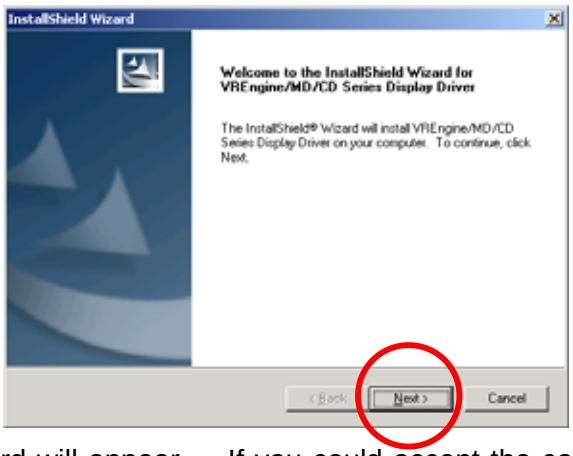


4) [Choose Setup Language] dialog box will appear and select [English], then click [OK].

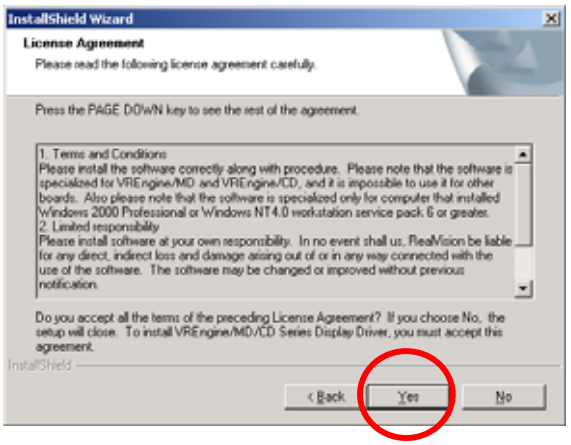


5) Following message will appear and then a next wizard will appear automatically.

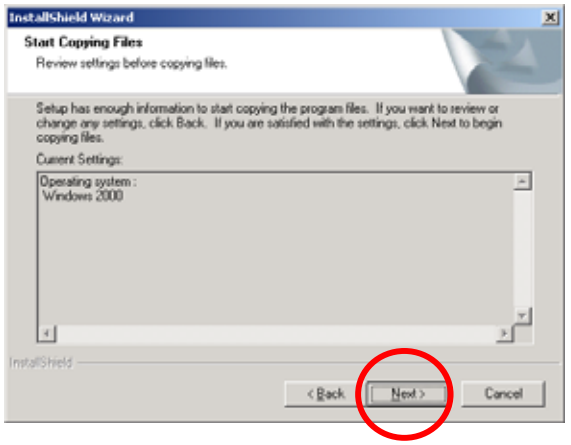
6) [InstallShield Wizard] will appear and then click [Next] button.


InstallShield Wizard
Welcome to the InstallShield Wizard for VREngine/MD/CD Series Display Driver
The InstallShield® Wizard will install VREngine/MD/CD Series Display Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

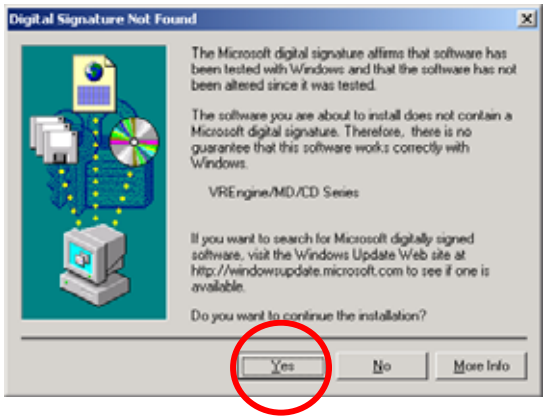
7) Following Wizard will appear . If you could accept the contents of [License Agreement], then you click [Yes]. If you click [No], then the install program will terminate and the installation has not been done.


InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
1. Terms and Conditions
Please install the software correctly along with procedure. Please note that the software is specialized for VREngine/MD and VREngine/CD, and it is impossible to use it for other boards. Also please note that the software is specialized only for computer that installed Windows 2000 Professional or Windows NT4.0 workstation service pack 6 or greater.
2. Limited responsibility
Please install software at your own responsibility. In no event shall us, RealVision be liable for any direct, indirect loss and damage arising out of or in any way connected with the use of the software. The software may be changed or improved without previous notification.
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install VREngine/MD/CD Series Display Driver, you must accept this agreement.
InstallShield
< Back
Yes
No

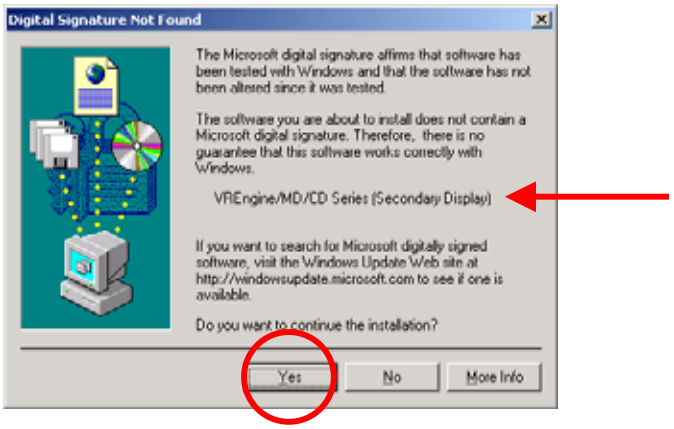
8) Following Wizard will appear. Make sure the setting and then click [Next].


InstallShield Wizard
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
Operating system :
Windows 2000
InstallShield
< Back
Next >
Cancel

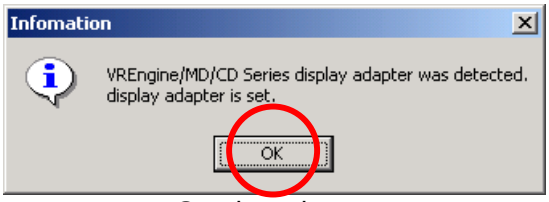
9) Following dialog box will appear and then click [Yes]. This dialog box will appear twice for Windows 2000 or once for Windows XP. There appears no dialog box for Windows NT.


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
VREngine/MD/CD Series
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

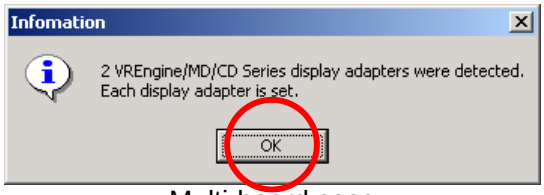
10) If multiple board is installed, following dialog box will appear two times of the installed number of board(s) for Windows 2000 or one time of the installed number of board(s) for Windows XP. There appears no dialog box for Windows NT. Please click [Yes] for each dialog box. After the secondary board, each dialog box show what number of board is corresponded.


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
VREngine/MD/CD Series (Secondary Display)
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

11) Following dialog box will appear and then click [OK]. If multiple board is installed, same type of dialog box will appear as same as the number of boards and then click [OK] for each of them.

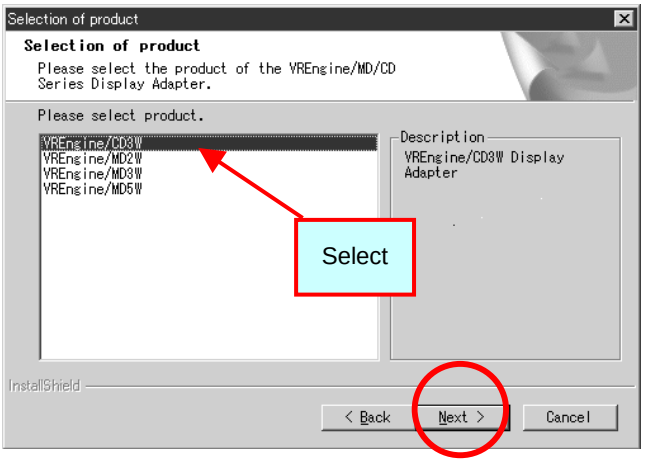


One board case

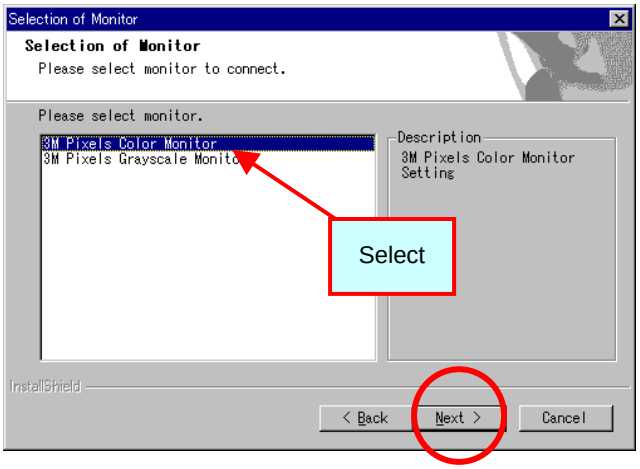


Multi-board case

12) Number of board is appear in the wizard. Select the installed board and then click [Next]. Please see page 19 about [Selection of product].



13) Following wizard will appear. Select the type of LCD which you connected and then click [Next].



Note)
Make sure to do settings for [Selection of Product] and [Selection of Monitor] for each board respectively when you install multiple boards into a host system.
In multiple board configurations, there is no problem when you install same boards and same LCD monitors, but you have to pay attentions to following points when you install different type of boards or connect different type of LCD monitors.

- Make sure each board is installed to which PCI bus slot.
- Make sure the order of board (Board detection order at system boot time).
- Make sure which board is connected to which LCD monitor.

By these confirmation, you can make sure the relation between the dialogs ([Selection of Product] dialog and [Selection of Monitor] dialog) and boards.

Regarding 12) [Selection of Product] dialog and 13) [Selection of Monitor] dialog, please refer following tables and select contents correctly.

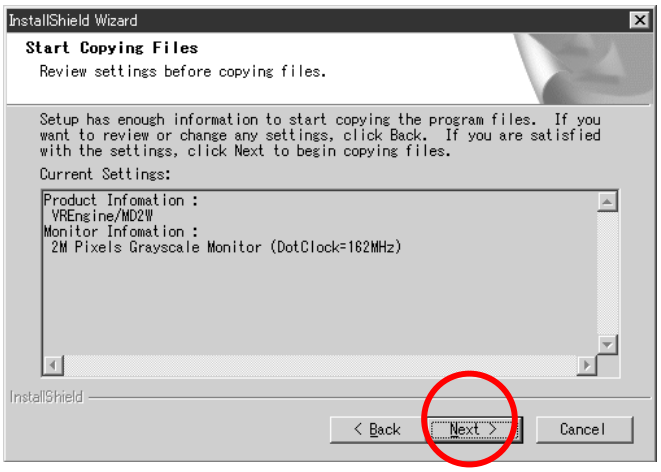
About [Selection of Product]

Product Name	Setting
VREngine/MD2W	Using VREngine/MD2W card
VREngine/CD3W	Using VREngine/CD3W card for Color display
VREngine/MD3W	Using VREngine/MD3W card for Grayscale display
VREngine/MD5W	Using VREngine/MD5W card for Grayscale display

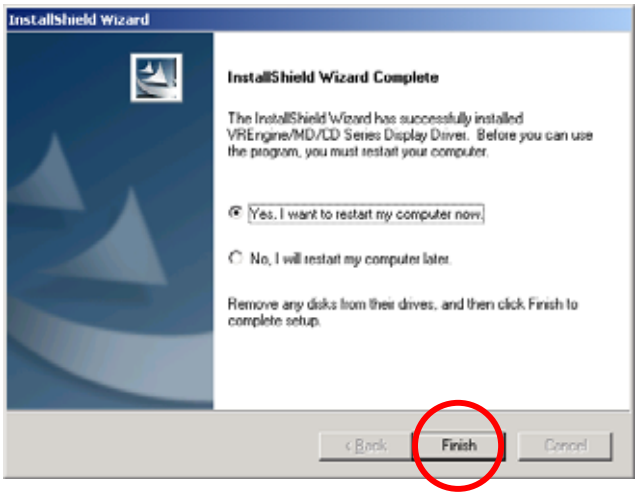
About [Selection of Monitor]

Product Name	Monitor Specification
VREngine/MD2W	2M pixel, Color Monitor
	2M pixel, Grayscale Monitor
VREngine/CD3W	3M pixel, Color Monitor
VREngine/MD3W	3M pixel, Color Monitor
	3M pixel, Grayscale Monitor
VREngine/MD5W	5M pixel, Grayscale Monitor

14) Following wizard will appear and [Current settings:] show the results of settings. Make sure the setting contents and click [Next]. Then, actual software driver installation procedure will start.


InstallShield Wizard
Start Copying Files
Review settings before copying files.
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
Product Infomation :
VREngine/MD2W
Monitor Infomation :
2M Pixels Grayscale Monitor (DotClock=182MHz)
InstallShield
< Back
Next >
Cancel

15) Following [InstallShield Wizard Complete] will appear and select [Yes, I want to restart my computer now]. Then, click [Finish] button.
Windows will restart.


InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed VREngine/MD/CD Series Display Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

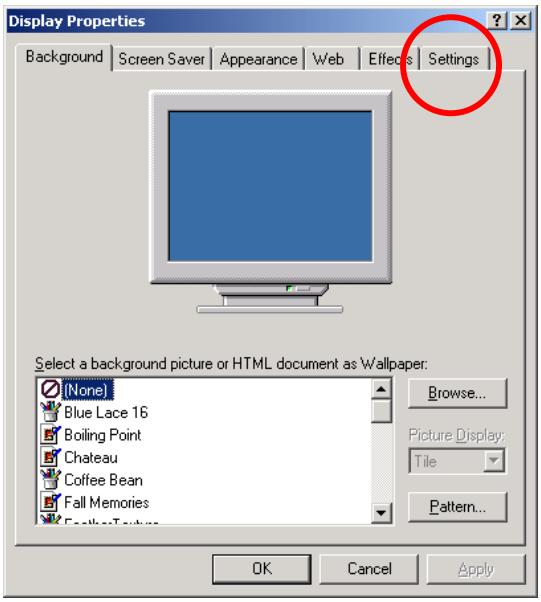
Note)
When you add board(s) or change a PCI bus slot, you need to un-install (see page 33) once and you need to install a software driver again.

Note)
When you install multiple board, the system may not boot in some cases. Then, please exchange slot for boards. This problem is caused by the problem of BIOS on mother board in some cases.

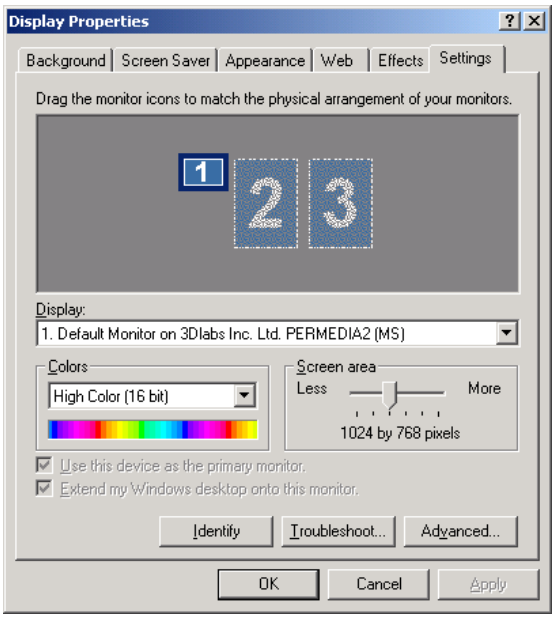
5. Display Properties Settings

5.1 Display Properties for Single board configuration

From [Control Panel], double click [Display] icon, and then start [Display Properties]. Please select [Setting] and click.



Following dialog box will appear.

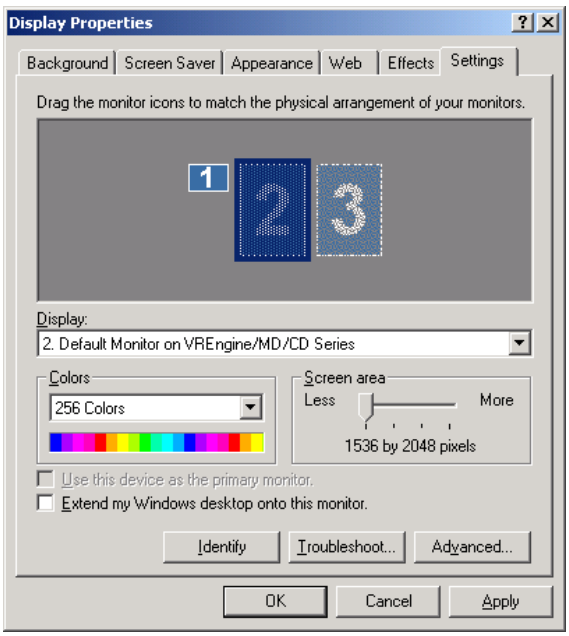


Note)
At above example for [Display Properties], second and third display icons are for the VREngine. The board for the first display icon [1] indicates a graphics board that is installed into AGP bus slot or PCI bus slot, or graphics adaptor on a mother board of the host system. This first icon doesn't appear when only the VREngine is installed.

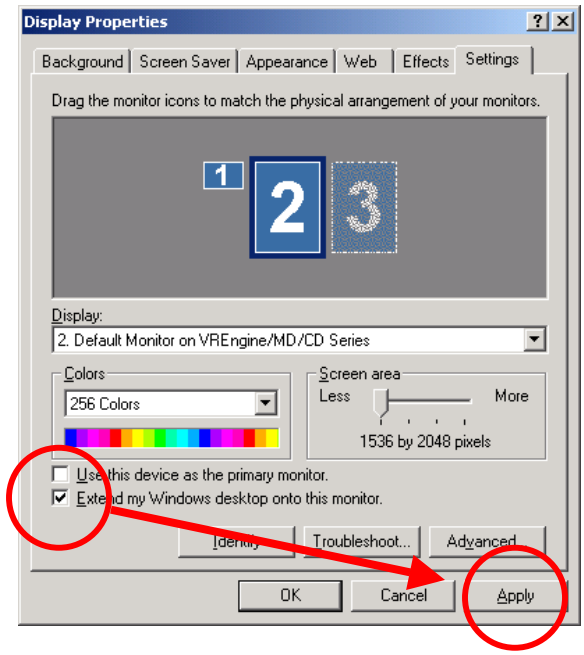
Note)
To support the DualView mode in Multi-monitor mode, virtual monitor(s) icon is displayed in [Display Properties]. But usually, the icon can't be selected and surrounded by a dotted line.
At above example for [Display Properties], third display icon is a virtual display.
Please see page 31 for details about DualView mode.

At above example for [Display Properties], newly installed VREngine can control up to two monitors but the board has not been displayed yet because of without display settings.

Please select the icon of monitor [2] for display settings.



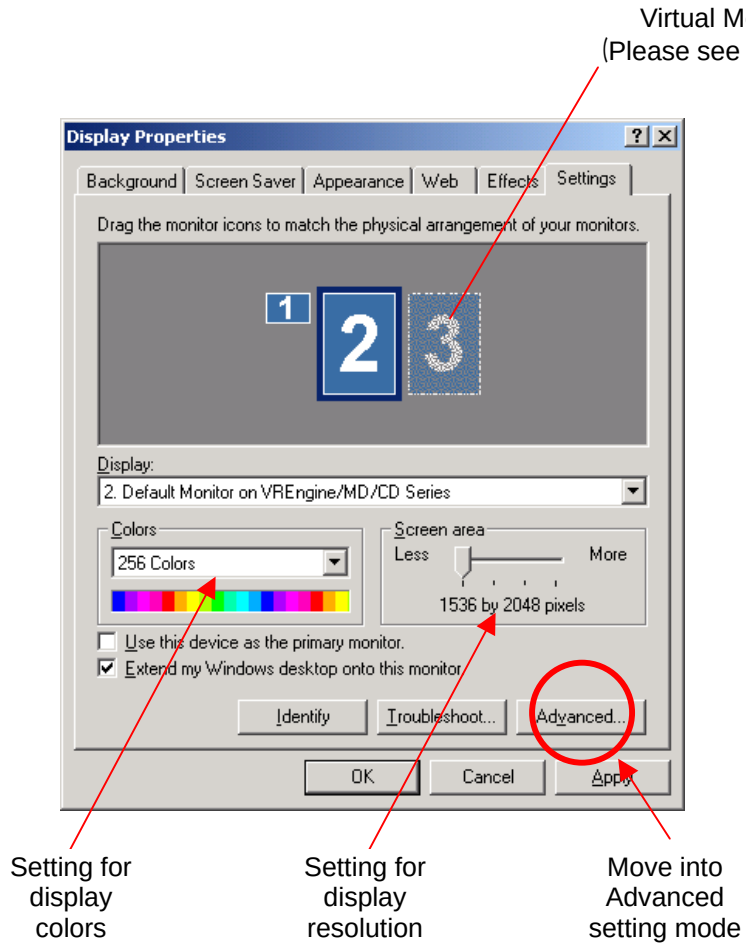
Please click to check [Extend my windows desktop onto this monitor] to do settings. The display icon [2] will be surrounded by a solid line as follows and then click [Apply].



Here, the second monitor is available. Third monitor will be available only when DualView mode in Multi-monitor mode (please see page 29) is selected. Third monitor can't be selected (surrounded by a dotted line) at WideView mode or TwinView mode.

Following settings are possible for second monitor at this situation.

- Setting for display colors → [Colors]
  You can select display colors for color monitor(s) from 256 colors, High Color (16-bit colors) or True Color (32-bit colors). In case of Grayscale monitor(s), only 256 colors (256 scales) can be selected.
- Setting for display resolution → [Screen Area]
  You can change the resolution of display or landscape/portrait setting.
- Moving into advanced setting mode → [Advanced]
  You can move into advanced setting mode and set following three display modes.
  - Grayscale Mode
  - Multi-monitor Mode
  - Transfer Mode



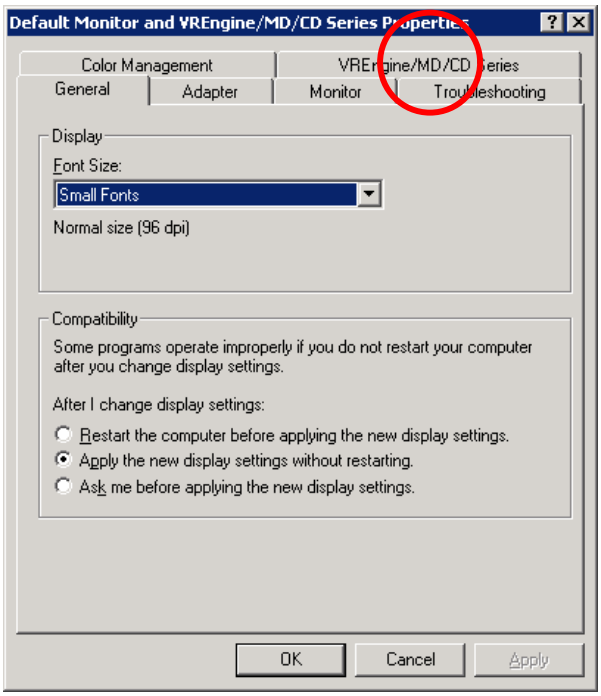
Note) **MD2W** **MD3W** **MD5W**

Please note following points when use grayscale mode with WindowsXP.

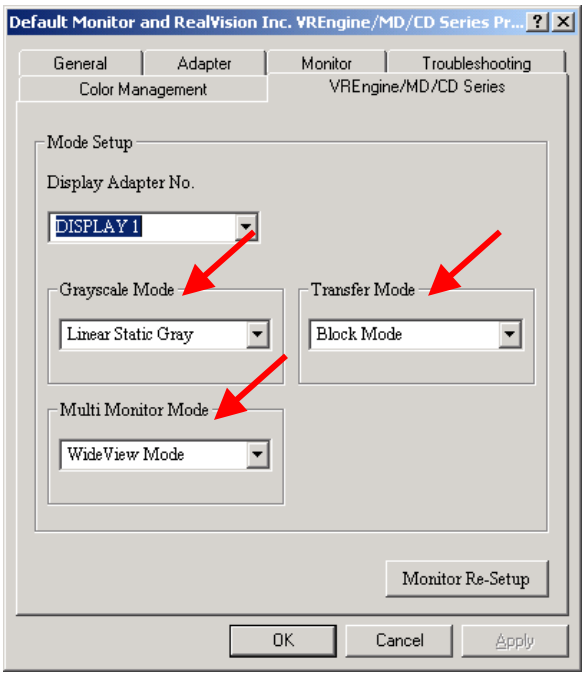
In WindowsXP operating system, 256 colors is not normally supported and you can't set 256 color mode by [Color]'s tab in [Display Properties]. Please set as follows to set 256 colors.

1) Select monitor for setting at [Display Properties].
2) Click [Advanced] button or double click monitor icon for setting and [Monitor and RealVision Inc. VREngine/MD/CD Series Properties] dialog appears.
3) Select [Adaptor] and click [List All Modes,,,] button and mode reference appears.
4) Select the resolution and click [OK]

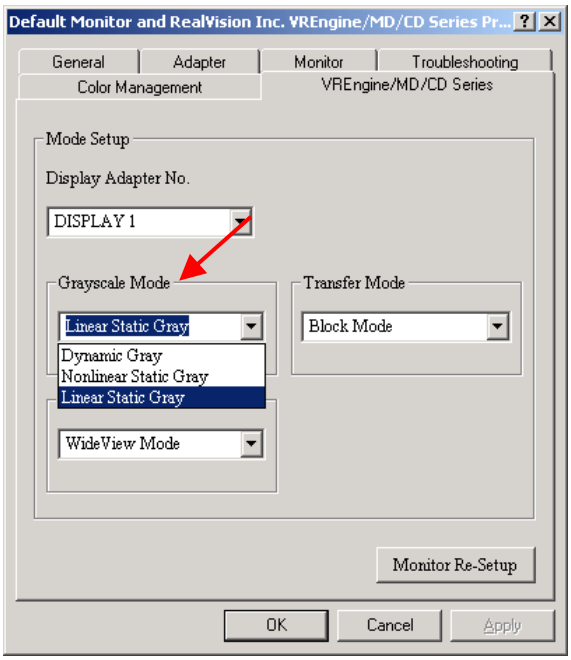
Click [Advanced], then following dialog box will appear.



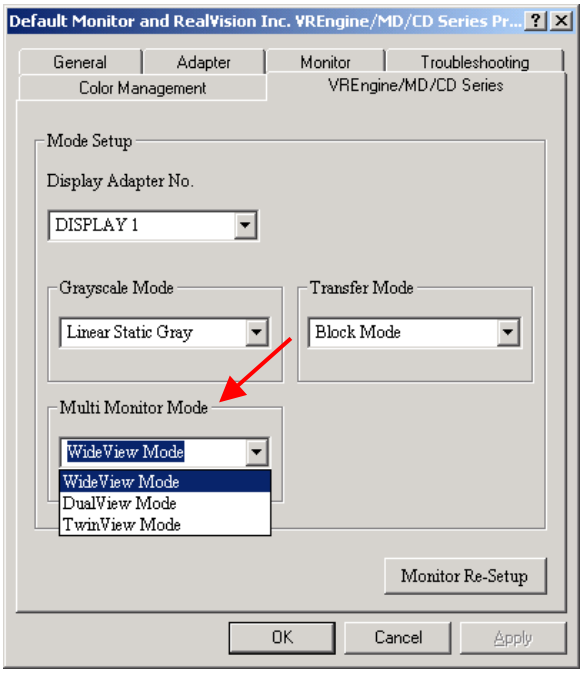
Click [VREngine/MD/CD Series], then following dialog box will appear. You can set three modes for each monitor respectively.



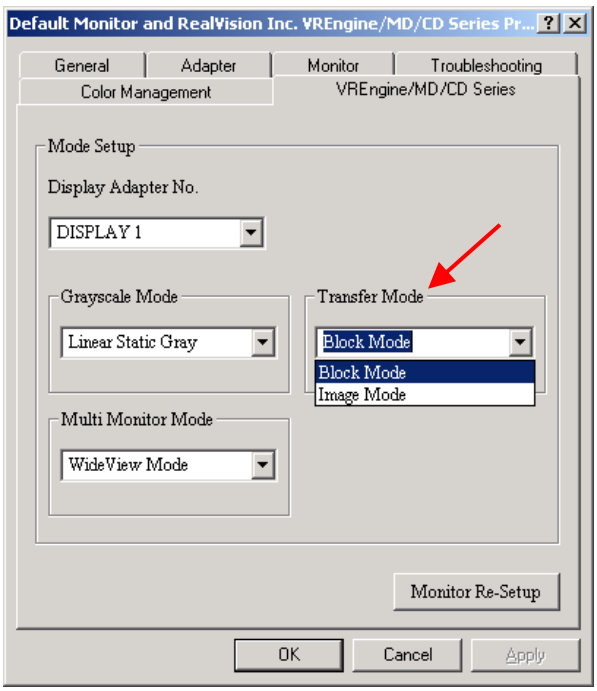
Setting for [Grayscale Mode] MD2W MD3W MD5W
Please see page 29 for details.



Setting for [Multi-monitor Mode] MD2W MD3W MD5W
Please see page 29 for details.



Setting for [Transfer Mode]
Please see page 29 for details.



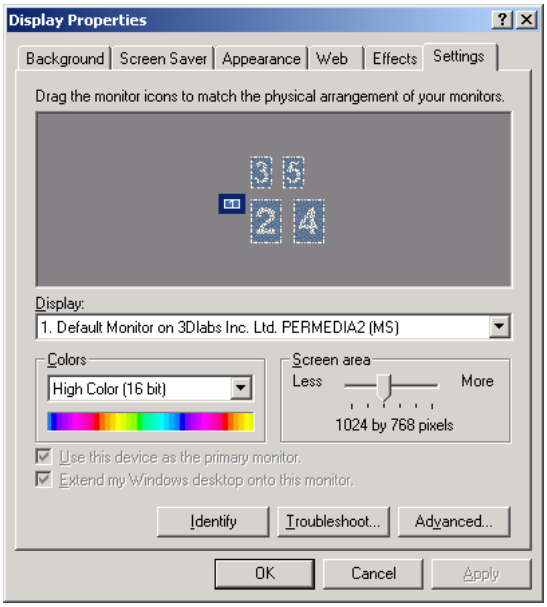
After the new settings for each mode, click [Monitor Re-setup] button, then the installer executes the Re-Setup procedure for the product.

Note)
After the setting for each mode, the setting will be valid to click [OK] or [Apply] button.
In case of the setting for [Grayscale] or [Multi-monitor Mode], the dialog box asking whether reboot or not will appear. Then, only reboot will make valid the new settings.

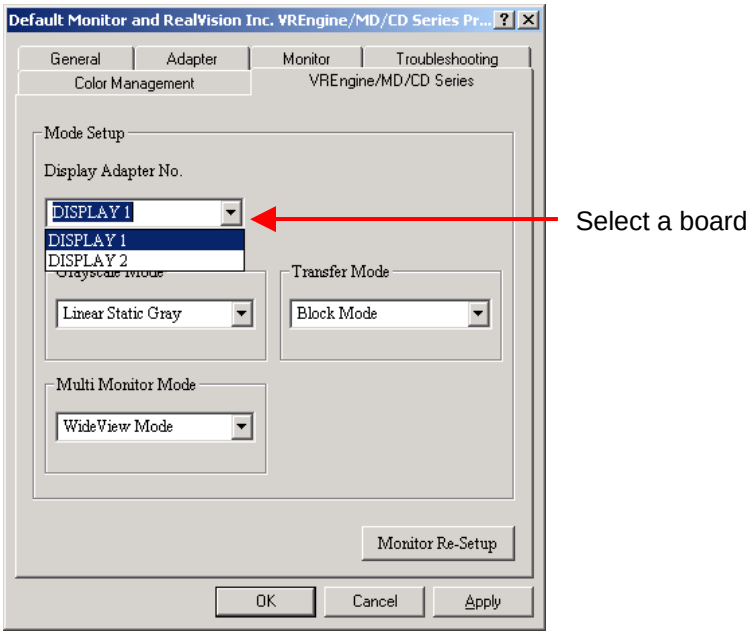
Note)
If you click [Monitor Re-Setup], the step 4) [Choose Setup Language] (please see page 12) of software driver installation procedure will appear. Then you follow the normal procedure and you may change display colors or dot clock at the step 13). Finally the new setting will be valid by the reboot of Windows at the Step 15).

5.2 Display Properties for Multiple board configuration

[Display properties] when multiple boards are installed is as follows.



Select each monitor icons and go to [Default Monitor and VREngine/MD/CD Series Products] as the case of one board configuration. Then, select one board using [Display Adaptor NO.] and set functions respectively.



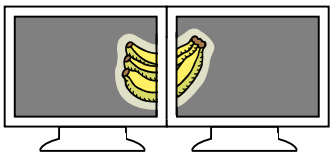
5.3 Details for Display Properties

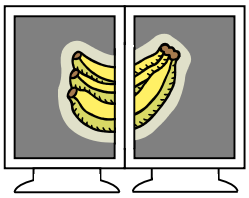
Detail setting parameters are described in following table.

Settings	Description
Selection of Board	Allows you to select and configure for each board when you have two or more boards installed.
Multi-monitor Mode MD2W MD3W MD5W Please see page 30-32 too.	Allows you to select one display mode from following three mode in multi-monitor mode for displaying image(s) on multiple monitors. WideView Mode Two monitors display images as one monitor. TwinView Mode Same images are displayed on two monitors (mirroring). DualView Mode 2 monitors display images independently.
Grayscale Mode MD2W MD3W MD5W	To control grayscale display, three palette modes (Linear Static Gray, Dynamic Gray, Non-Linear Static Gray) are available. You can select one of three modes. These modes are valid only for grayscale mode. Linear Static Gray This mode provides fixed 256 entries in the palette. Therefore, it is different from standard system palette of Windows. Dynamic Gray Application can dynamically change the entry of palette in this mode. Non-Linear Static Gray This mode sets the first and last ten palette entries for Windows. The other 236 entries are ramped in ascending order.
Transfer Mode	Select one of two modes (Block Mode, Image Mode) Block Mode This mode provides the best performance. But some visual artifact may be seen. If they are seen, change mode to Image Mode. Image Mode This mode provides the most smooth images

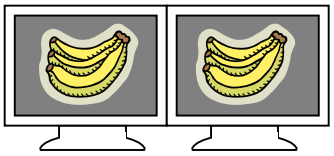
Display Modes in Multi-monitor Mode : MD2W MD3W MD5W

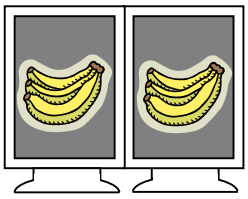
WideView Mode



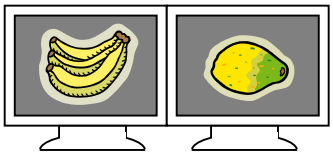


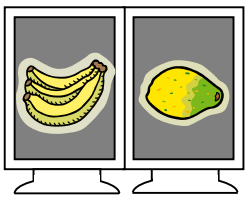
TwinView Mode

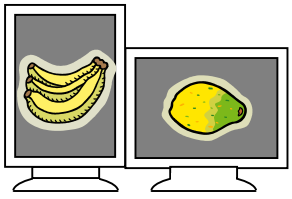


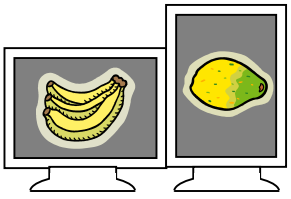


DualView Mode









About Dual Mode : MD2W MD3W MD5W

In DualView Mode, one VREngine board is recognized as 2 devices for operating system (Windows). To support the DualView Mode, virtual monitor(s) are displayed in [Display Properties]. Normally the icon of virtual monitor(s) is surrounded by a dotted line and this indicates that you can't use virtual monitor(s) (please see page 24).

When you use DualView mode, you need to enable the virtual monitor(s) (Windows desktop can move to the monitor). You can enable the virtual monitor(s) by selecting [DualView] at [Multi-monitor Mode] during you are selecting the corresponding monitor to the virtual monitor.
(In case of this manual, in the example window display at page 26, Select [DualView] at [Multi-monitor Mode] with selecting the monitor icon of [2])

Please note following points for DualView Mode setting and usage.

1) [Colors] setting of two monitors must be the same by manual operation.

2) You can't enable the virtual monitor(s) except for DualView Mode.

3) Two monitors that are used in DualView Mode must be connected to one VREngine board. Make sure the correspondence of monitor numbers and actual monitors by using [Identify] button which displays the monitor numbers on actually connected monitors

4) You can't use DualView Mode on Windows NT system.

5) Do not select 640x480 or 800x600 resolution at [Screen Area] on Windows 2000 system

6) You can't use DualView Mode on Windows 2000 system if the host system (PC) isn't compatible with ACPI.
(You can confirm whether your PC is ACPI compatible or not. If you can find the item "ACTP Uni-processor PC" at [Computer] (←[Device Manager]←[Control Panel]), then your PC is compatible with ACPI.)

7) There are following restrictions in DualView mode, in case that virtual monitor is set to valid, do not set other monitor (that is not a virtual monitor) to invalid.
   - If you re-boot the system in this situation, both monitors in DualView mode will be invalid in the case of multiple board configuration and re-setting will be required.
   - If you re-boot the system in this situation and monitors are VGA compliant, the virtual monitor will be invalid and another monitor will be

valid. This is the opposite situation with a normal case.

- In the case of multiple board configuration and both monitors in DualView mode are invalid, if you set the virtual monitor valid, then color display is disordered. After that, if you set another monitor valid, then color displays of both monitors are recovered.

Setting monitor valid or invalid is done by ON/OFF the check of [Extend my Windows desktop onto this monitor] in Settings of [Display Properties]. Furthermore, when [Use this device as the primary monitor.] is checked ON, you cannot set the monitor invalid.

Other settings :
Regarding the monitor power save functions, only [Turn off the power of monitor] is supported and [System standby / Suspend mode] is not supported.

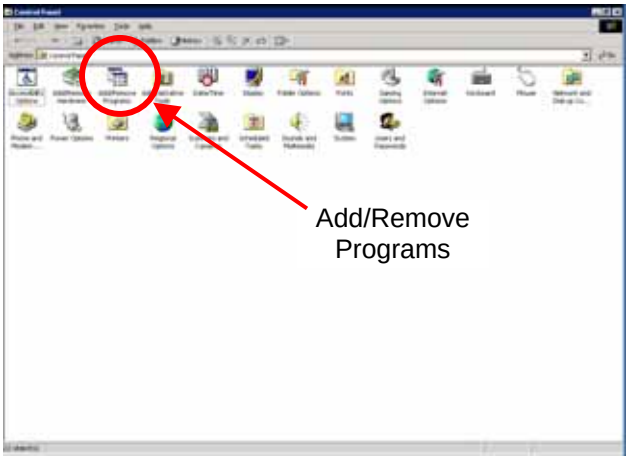
6. Uninstall Driver Software

6.1 Un-installation for WindowsNT4.0/ 2000/ XP

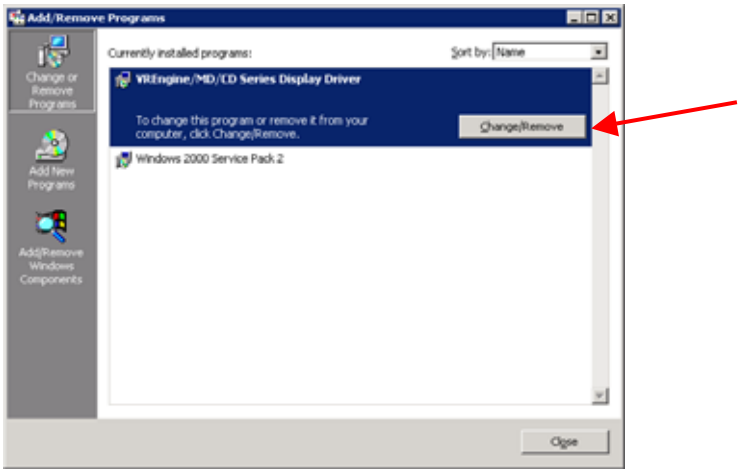
If you need to install your RealVision display driver, follow these instructions for Windows NT 4.0 and Windows 2000.

1) Select [Settings(s)] from Start Menu on Task Bar -> then click [Control Panel(c)].

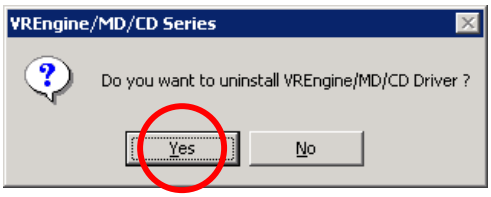
2) Double Click [Add/Remove Programs] icon.

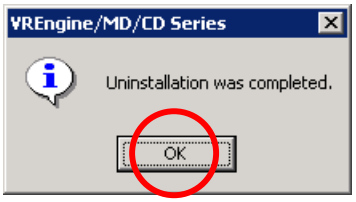


3) Select [VREngine/MD/CD Series] from the list-> then click [Add/Remove] button.

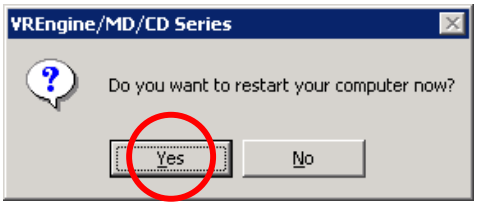


4) Click [Yes] button.





5) Restart Windows after all of applications are terminated. Un-installation have not completed without restart.



7. Product Information

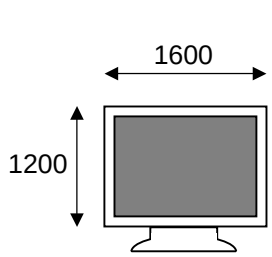
7.1 Technical Specification *(VREngine/MD2W)* MD2W

Operating Conditions	Host system	DOS/V compatibles
	Operating systems	Windows NT 4.0 Workstation (ServicePack 6 or greater) Windows 2000 Professional Windows XP
	Host processor	intel IA32, AMD, etc.
	Operating frequency	>500MHz
	Host bus spec.	PCI 32-bit / 5V, 3.3V (PCI Version2.2 compliant)
	Host bus frequency	33MHz
	Size of main memory	>256Mbytes
	Operating voltage	5V ±0.25V
	Power consumption	15W (max)
Mechanical Spec.	Board size (Outline)	174.5 (W) x 106.7 (H) mm or 7.1 (W) x 4.2 (H) inch
	Weight	158g / 0.34lbs
	# of occupied slot	PCI bus slot x1
	# of board	PCI board x1
Display Resolution	Single-monitor case	1600 x 1200 pixel (Landscape) 1200 x 1600 pixel (Portrait)
	Multi-monitor case	3200 x 1200 pixel (Landscape) 2400 x 1600 pixel (Portrait)
Connectable Monitor Note 1)		2M-VESA compliant digital LCD monitor 2M-digital LCD monitor
# of connectable monitors		Max 2 monitors
Display Mode Note 2)	Single-monitor case	Landscape Portrait
	Multi-monitor case	Landscape + Landscape Portrait + Portrait
VGA display function Note 3)	Available	VGA standard compliant
Rotate-direction of Screen	Counter clockwise	At Landscape – Portrait switching
	Clockwise	
# of display bits		8-bit/pixel grayscale 10-bit/pixel grayscale (Integrated Gamma table can select 256 scales from 1024 scales) 8, 24-bit/pixel color
Display memory size		64Mbytes SDRAM
Video Output Std.	DVI (Digital Visual Interface)	DVI-D
Video Output Spec. (Grayscale/Color)	Dot Clock	132.5MHz/147.2KHz
	H-Sync	72KHz/75KHz
	V-Sync.	60Hz/60Hz
	Refresh Rate	60Hz/60Hz
Certification		UL/cUL, FCC, CE

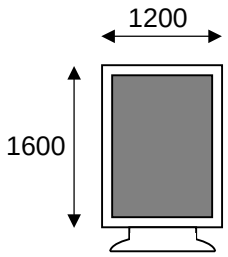
Operating Temperature		0 - 45℃ / 32 – 113F
Condition for preservation	Temp. & Humidity	-40 – 75℃ / -40 – 167F 5 – 100% (None condensing)
	Altitude	Lower than 11,000m / 36,000ft

Note 1) With the use except for 2M-VESA compliant monitors, EDID can provide compatibility.

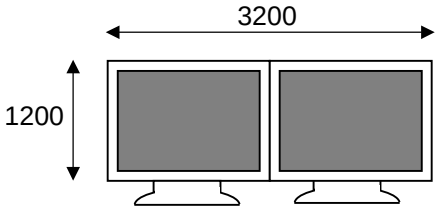
Note 2) Display mode specifications

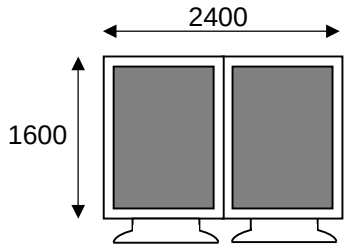


Landscape display

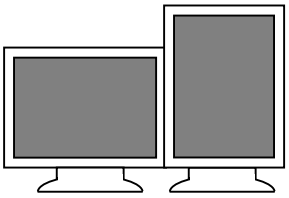


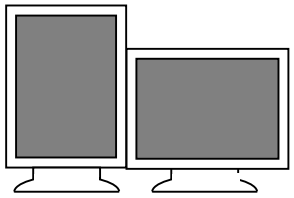
Portrait display





(Multi-monitor mode)





（DualView mode only）

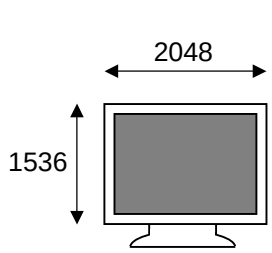
Note 3) Although VGA output is VGA Standard compliant, user subjects to the use of Multi-scan monitor since refresh rate might be 70Hz up video mode.

7.2 Technical Specification *(VREngine/MD3W/CD3W)* MD3W CD3W

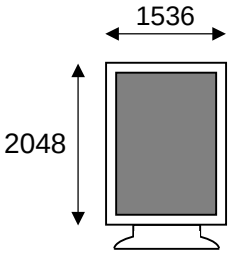
Operating Conditions	Host system	DOS/V compatibles
	Operating systems	Windows NT 4.0 Workstation (ServicePack 6 or greater) Windows 2000 Professional Windows XP
	Host processor	intel IA32, AMD, etc.
	Operating frequency	>500MHz
	Host bus spec.	PCI 32-bit / 5V, 3.3V (PCI Version2.2 compliant)
	Host bus frequency	33MHz
	Size of main memory	>256Mbytes
	Operating voltage	5V ±0.25V
	Power consumption	15W (max)
Mechanical Spec.	Board size (Outline)	174.5 (W) x 106.7 (H) mm or 7.1 (W) x 4.2 (H) inch
	Weight	158g / 0.34lbs
	# of occupied slot	PCI bus slot x1
	# of board	PCI board x1
Display Resolution	Single-monitor case	2048 x 1536 pixel (Landscape) 1536 x 2048 pixel (Portrait)
	Multi-monitor case (only MD3W)	4096 x 1536 pixel (Landscape) 3072 x 2048 pixel (Portrait)
Connectable Monitor		3M-digital LCD monitor
# of connectable monitors		Max 2 monitors (MD3W only)
Display Mode Note 1)	Single-monitor case	Landscape Portrait
	Multi-monitor case (MD3W only)	Landscape + Landscape Portrait + Portrait
VGA display function Note 2)	Available	VGA standard compliant
Rotate-direction of Screen	Counter clockwise	At Landscape – Portrait switching
# of display bits		8-bit/pixel grayscale 10-bit/pixel grayscale (Integrated Gamma table can select 256 scales from 1024 scales) 8, 24-bit/pixel color
Display memory size		64Mbytes SDRAM
Video Output Std.	DVI (Digital Visual Interface)	DVI-D
Video Output Spec.	Dot Clock	64.4MHz
	H-Sync	96.72KHz
	V-Sync.	60Hz
	Refresh Rate	60Hz
Certification		UL/cUL, FCC , CE
Operating Temperature		0 – 45℃ / 32 – 113F

Condition for preservation	Temp. & Humidity	-40 – 75℃ / -40 – 167F 5 - 100% (None condensing)
	Altitude	Lower than 11,000m / 36,000ft

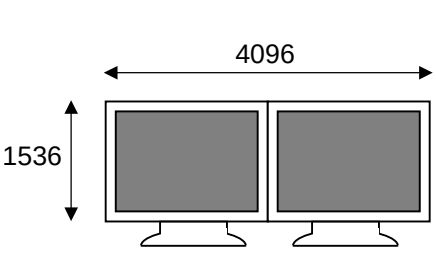
Note 1) Display mode specifications

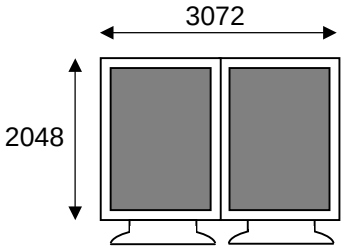


Landscape display

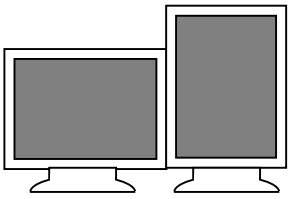


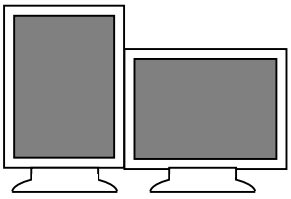
Portrait display





(MD3W Multi-monitor Mode)





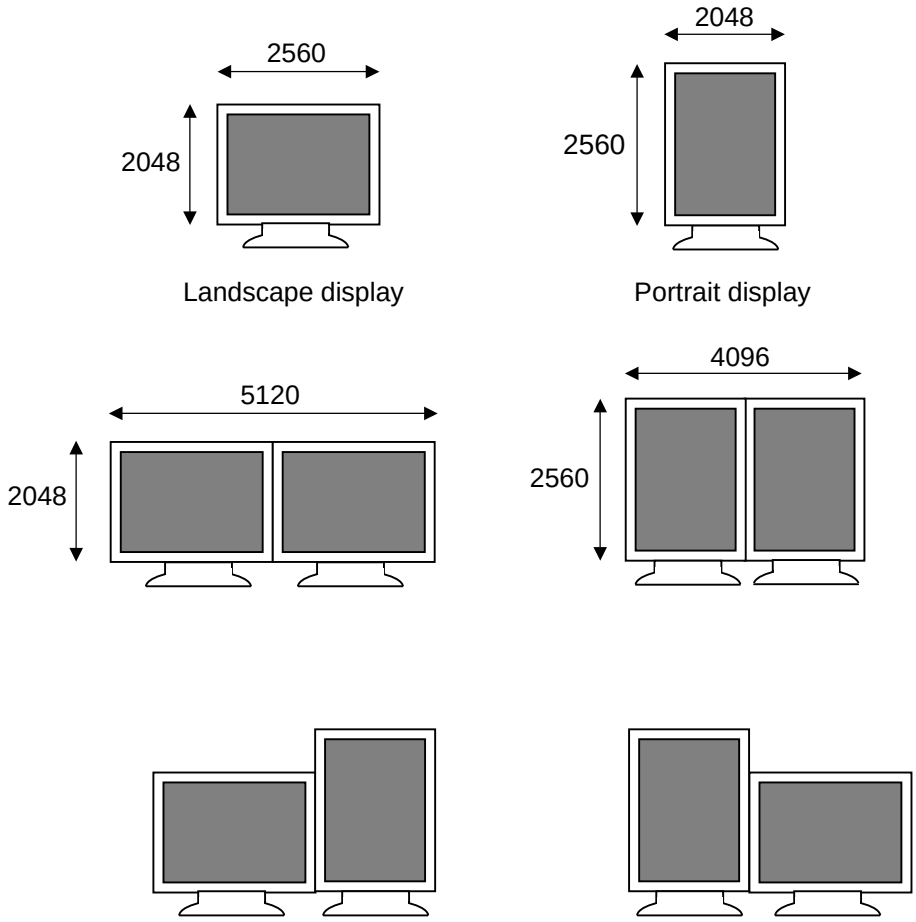
(MD3W DualView Mode only)

Note 2) With a VGA mode, VGA display of 640X480 dots can be displayed with 2X of in horizontal and vertical sizes.

7.3 Technical Specification (VREngine/MD5W) MD5W

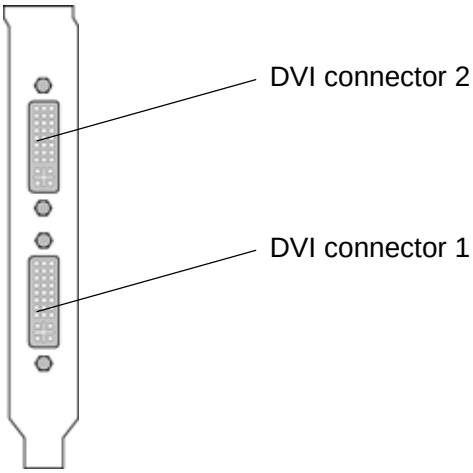
Operating Conditions	Host system	DOS/V compatibles
	Operating systems	Windows NT 4.0 Workstation (ServicePack 6 or greater) Windows 2000 Professional Windows XP
	Host processor	intel IA32, AMD, etc.
	Operating frequency	>500MHz
	Host bus spec.	PCI 32-bit / 5V, 3.3V (PCI Version2.2 compliant)
	Host bus frequency	33MHz
	Size of main memory	>256Mbytes
	Operating voltage	5V ±0.25V
	Power consumption	15W (max)
Mechanical Spec.	Board size (Outline)	174.5 (W) x 106.7 (H) mm or 7.1 (W) x 4.2 (H) inch
	Weight	158g / 0.34lbs
	# of occupied slot	PCI bus slot x1
	# of board	PCI board x1
Display Resolution	Single-monitor case	2560 x 2048 pixel (Landscape) 2048 x 2560 pixel (Portrait)
	Multi-monitor case	5120 x 2048 pixel (Landscape) 4096 x 2560 pixel (Portrait)
Connectable Monitor		5M-digital LCD monitor
# of connectable monitors		Max 2 monitors
Display Mode Note 1)	Single-monitor case	Landscape Portrait
	Multi-monitor caser	Landscape + Landscape Portrait + Portrait
VGA display function Note 2)	Available	VGA standard compliant
Rotate-direction of Screen	Counter clockwise	At Landscape – Portrait switching
# of display bits		8-bit/pixel grayscale 10-bit/pixel grayscale (Integrated Gamma table can select 256 scales from 1024 scales)
Display memory size		64Mbytes SDRAM
Video Output Std.	DVI (Digital Visual Interface)	DVI-D
Video Output Spec.	Dot Clock	73.6MHz
	H-Sync	103KHz
	V-Sync.	50Hz
	Refresh Rate	50Hz
Certification		UL/cUL, FCC , CE
Operating Temperature		0 – 45℃ / 32 – 113F
Condition for preservation	Temp. & Humidity	-40 – 75℃ / -40 – 167F 5 - 100% (None condensing)
	Altitude	Lower than 11,000m / 36,000ft

Note 1) Display mode specifications

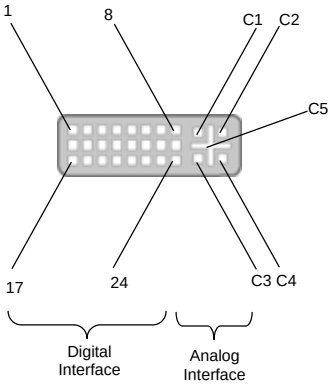


Note 2) With a VGA mode, VGA display of 640X480 dots can be displayed with 2X of in horizontal and vertical sizes.

7.4 Monitor Interface



Pin Location



PIN	Signal	PIN	Signal	PIN	Signal
1	T.M.D.S. Data 2-	9	T.M.D.S. Data 1-	17	T.M.D.S. Data 0-
2	T.M.D.S. Data 2+	10	T.M.D.S. Data 1+	18	T.M.D.S. Data 0+
3	T.M.D.S. Data 2/4 Shield	11	T.M.D.S. Data 1/3 Shield	19	T.M.D.S. Data 0/5 Shield
4	T.M.D.S. Data 4-	12	T.M.D.S. Data 3-	20	T.M.D.S. Data 5-
5	T.M.D.S. Data 4+	13	T.M.D.S. Data 3+	21	T.M.D.S. Data 5+
6	DDCClock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (return for +5V, HSync and Vsync)	23	T.M.D.S. Clock+
8	N.C.	16	Monitor Sense	24	T.M.D.S. Clock-
C1	N.C.	C2	N.C.	C3	N.C.
C4	N.C.	C5	N.C.		

8. Limited Warranty

RealVision's Standard high-resolution display controller Warranty and Customer's sole and exclusive remedies for such warranties are specified below. REALVISION'S WARRANTIES STATED IN THIS SECTION ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

No statement, including without limitation, representations regarding capacity, suitability for use or performance of Product(s), whether made by RealVision employees or otherwise, shall be deemed to be a warranty by RealVision for any purpose or give rise to any liability of RealVision unless expressly contained in this Warranty.

The warranties in this section do not apply to any Product(s) which has been (i) altered, except by RealVision or by another party adhering to RealVision's instructions, (ii) used in conjunction with another vendor's product resulting in a defect, or (iii) damaged by improper electrical power or environment, abuse, misuse, accident or negligence.

RealVision warrants to Customer that the High resolution display controller covered by the Standard High resolution display controller Warranty will be free from defects in workmanship and materials for a period of thirty-six (36) months from the date of purchase . For repairs after warranty period, please contact your local supplier.

9. About Disposing the Product

To dispose the product, follow your regional regulations. For the detail, contact your local government office.

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